

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number
WO 03/036576 A2(51) International Patent Classification⁷: **G07F 7/10**(21) International Application Number: **PCT/PL02/00075**

(22) International Filing Date: 21 October 2002 (21.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P.350218 20 October 2001 (20.10.2001) PL

(71) Applicant and

(72) Inventor: **WOJCIECHOWSKI, Wojciech** [PL/PL]; u.
Brylantowa 1/3, P-80 180 Godansk (PL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

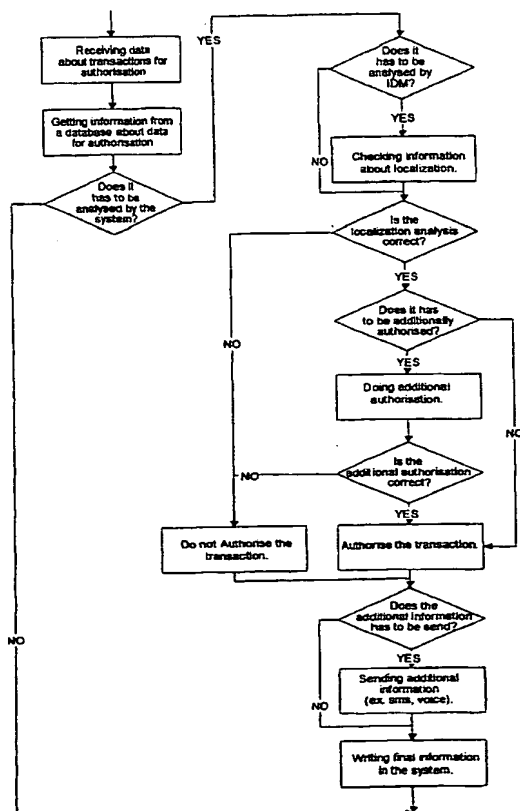
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

(74) Agent: **ADAMCZYK, Piotr**; Kancelaria Patentowa, P.O.
Box 39, PL-00-956 Warszawa 10 (PL).— without international search report and to be republished
upon receipt of that report

[Continued on next page]

(54) Title: METHOD AND SYSTEM OF ADDITIONAL SECURING OF PAYMENT CARD PAYMENTS



(57) Abstract: In the system a payment card can be assigned a communication terminal which provides for connection with the user and which can be remotely located. Before the payment is made, at least one additional authorization question can be formulated and sent to the communication terminal and the decision on transaction processing is made based on the answer provided by the user of the terminal. It can be checked whether the current geographical location of the communication terminal is close enough to the geographical position of payment terminal, or whether it is feasible that the card holder can move from the previous payment terminal to the current one. In its basic version, the system contains an information database about the cards (5) modifiable via a modification interface (8) by the system of card information management, authorization interface (11) for communication with the card authorization center, telecommunications interface (9) providing connections with terminals and a control and calculation module (2). The system can also contain information database about the transactions made with cards (6), interface (10) working as an intermediary in providing information on available payment terminals and their geographical position, location module (14) providing the system with the information on terminal locations and calculation module (3) calculating the time-spatial distance of the current transaction from the previous transaction made with the same card via payment terminal or the spatial distance between the payment terminal in which the

WO 03/036576 A2



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Method and System of Additional Securing of Payment Card Payments

Technical Field

The subject of the invention is the method and system of additional securing of payments made with payment cards, complementing the known methods and systems of authorization of transactions made with payment cards.

Background Art

The collective term "payment card" includes all types of cards enabling making transactions, debit cards and credit cards in particular. There are, generally speaking, two types of payments. The first one that requires a physical presence of the card in the payment system and the second one, in which such a presence is not required, it is enough only to provide some card-related information, such as e.g. its number and validity date. A payment system is any system requesting an operation of debiting, immediately or at a certain moment in the future, the balance of the bank account related to the payment card in exchange for a service provided, goods delivered, etc. The physical presence of the card in the payment system is ensured by the so called payment terminal, which is a part of the system. Cash drawing via an automated telling machine is also considered to be a card payment, where the automated telling machine and the related banking system are examples of a payment system whereas the automated telling machine is an example of a payment terminal. From the point of view of transaction security, there are two types of payment operations made with a payment card, that is local payments and authorized payment. A local payment is an operation made without referring to an external system of payment authorization and most frequently consisting in checking locally whether it is possible to make the transaction using the information included in the card itself, for example, the information in magnetic strip or the electronic memory system built into the card. In that case, the information on the payment card account debit is transferred to the authorization center with certain delay. An authorized payment is an operation referring to an external authorization system, also called card authorization center. If the payments are made without physical presence of the payment card in the payment terminal or in the card scanner, for example the

transactions made via the Internet, it is necessary only to provide a few pieces of information related to the card, such as its number and validity date. A connection with the authorization center can be made to check if, e.g. the card has not been stolen, or whether it is still valid. Upon authorization of transactions during which the card is physically present in the payment system, the system checks, according to specified criteria whether the transaction is permitted or not. Such information as for example the maximum cumulative amount of the payments made with the card or the balance of the bank account can also be checked. The payment will not be made if the authorization system does not permit it. The authorization system can be provided by the bank that issued the payment card or by a unit established by the banks and working for the establishing banks, or by any specialized financial organizations.

The growth of the payment cards market is accompanied by increased number of crimes and frauds related to that type of payments. It results in significant financial losses and causes some distrust of customers concerning making payments with credit cards, which means that there is a considerable demand for additional systems and methods of securing such transactions. The invention is to complement the known techniques of payments with payment cards, such as for example using PIN, that is elimination or at least considerable reduction of the number of crimes and frauds related to the use of payment cards and increased trust of the customers.

Disclosure of Invention

The method according to the invention provides that, before the transaction is made, the information about the card the transaction is based on is taken from the card information database, then an authorization question is asked and sent to the communication terminal assigned to the card. When the answer comes from the communication terminal, it is forwarded to card authorization center, and if there is no answer from the terminal, an automatic authorization answer is sent to card authorization center.

In variation of the method according to the invention, an identification question is sent to the communication terminal apart from the authorization question. The identification answer received from the terminal is compared with the standard. The positive authorization answer received from the terminal is forwarded to card

authorization center only if the identification answer is compliant with the standard.

Another variation of the method according to the invention provides that, before the decision on sending an authorization question to the communication terminal it is checked on whether the transaction is to be made with the use of the payment terminal. Then, based on the data from information database on the transactions made with cards and on the information on the geographical position of payment terminal, the time-spatial distance from the previous transaction made via payment terminal with the same card is calculated. The calculated distance is compared with the standard and, depending on the result of the comparison, and possible additional rules, the transaction authorization is refused, or the authorization is granted automatically without any further questions, or the authorization question sent to the communication terminal is respectively modified.

Still another variation of the method according to the invention provides that the location of the localizable terminal assigned to the card of the transaction is additionally identified, and then the spatial distance between the payment terminal in which the transaction is made and the localizable terminal is calculated. After the distance has been calculated, it is checked whether it is small enough and, depending on the result of the check and possible additional rules, the transaction authorization is refused, or the authorization is granted automatically without any further questions, or the authorization question sent to the communication terminal is respectively modified.

The method according to the invention can be complemented by a stage of sending to the communication terminal the information on the events related to the card assigned to that terminal.

The system according to the invention works with the basic card authorization center. Each payment card serviced by the system is assigned at least one communication terminal. The system contains card information database modifiable with a modification interface by the card information management system, authorization interface for communication with card authorization center, telecommunications interface providing for connection with the communication terminal and control & calculation module.

In variation of the system according to the invention, the communication between the communication terminal and the communication interface is implemented via a voice server.

In another variation of the system according to the invention, the card information database contains standard identification answers of the users of the cards taken from communication terminals.

Next variation of the system according to the invention contains card information database on the transactions made with cards, an interface working as an intermediary in providing information on available payment terminals and their geographical position, a calculation module. The module calculates the time-spatial distance of the current transaction from the previous transaction made with the same card via the payment terminal.

Another variation of the system according to the invention additionally contains a location module providing to the system the information on the location of the localizable terminal assigned to the card taking part in the authorized transaction. The calculation module in this variation of the system also calculates the spatial distance between the payment terminal in which the transaction is made and the localizable terminal and compares it with the standard.

The communication terminal and localizable terminal used in the system of the invention can be one device.

In yet another variation of the system according to the invention, there is an information module providing to the communication terminal, via a communication interface, the information on the events related to the card to which the terminal is assigned.

Brief Description of Drawings

The invention is schematically presented on the accompanying drawings in which:
Fig. 1 shows the block diagram of the system in its basic version.

Fig. 2 shows the block diagram of the basic system complemented by a module to detect irregularities and an information module.

Fig. 3 shows a flow chart illustrating activities taken to execute a method according to the invention.

Fig. 4 shows a flow chart illustrating operation of the basic authorization (BA).

Fig. 5 shows a flow chart illustrating operation of the irregularities detecting module (IDM).

Fig. 6 shows a flow chart illustrating operation of the information module (IM).

Mode for Carrying Out the Invention

The present invention can make use of generally available telecommunications services, in particular voice transmission, automatic voice server, text messages transmission (SMS – Short Message Service), multimedia message transmission, electronic mail (e-mail) and “instant messaging”. The telecommunications services are accessible via a communication terminal which is held by the payment card user. A mobile phone or, to a smaller extent, “pager” are typical examples of such terminals. The invention also makes use of the so called localizable terminals, that is the terminals whose geographical position can be located. Any portable device, independent or working with other devices enabling identification of geographical position at any selected moment can be a localizable terminal. A mobile phone can be a typical example of a localizable terminal, since telephone network enables pretty precise identification of the current location of the mobile phone by using the information on the mobile phone or mobile phones in the network the range of which the given mobile phone is currently in. The invention can also make use of PDA (Personal Digital Assistant) and specialized tracking devices. Localizable terminals can also make use of various location technologies, both using the infrastructure of mobile telephone networks and the ones independent of such networks (e.g. GPS – “Global Positioning System”) or mixed technologies (e.g. GPS supported by mobile telephone network). In some special cases, a terminal can be at the same time a communication and a localizable terminal, thus becoming a universal terminal.

For the purpose of securing payments, the so called user preferences are defined. User preferences are a set of quantitative and/or qualitative features defining how the service of additional authorization is to be provided. For example, user preferences can define whether the given securing procedure is to be implemented or not (qualitative parameter) and the lowest amount from which the service of additional securing is to be provided (qualitative parameter).

The basic element of the system 1 is the control & calculation module 2. The module is connected to the card information database 5. In its basic version, the

system 1 has three interface modules (8,9 and 11) enabling communication with external systems. The communication interface 11 enables contact with the basic card authorization center 13 in order to receive authorization questions and send authorization answers. Thanks to the modification interface 8 it is possible to provide to the database 5 always updated payment card information coming from card information management system 15. The database 5, depending on how extended the system 1 is, collects, for example, payment cards identifiers and identification numbers of communication, localizable or universal terminals related to those cards. The database 5 also stores definitions on payment securing and related user preferences, as well as quantitative parameters of that service (for example the lowest amount from which the payment is to be controlled) and qualitative parameters of the elements of the service (for example, request for systematic refusal of authorization if the localizable terminal cannot be located). Communication interface 9, via telecommunications systems 16, provides contact with the communication terminal. Before the transaction that is to be additionally secured is made, the authorization center sends to control & calculation module 2 via interface 11 an authorization question. The module then retrieves from the database 5 the information related to the payment card for which additional securing is requested, and then the conditions triggering the procedure of additional authorization are checked. If the conditions are not met, for example, the amount of the transaction or the cumulative value of the amounts within a specified time period does not exceed a specified limit, then control & calculation module 2 sends back to authorization center 13 the answer with the automatic permit to make the operation. The answer is sent back via interface 11. If the conditions triggering additional transaction authorization are met, control & calculation module 2 identifies the communication terminal related to the payment card that the transaction authorization is related to. Depending on the capacity of the communication terminal and/or the description of the user preferences related to the given terminal, control & calculation module 2 tries to communicate with the holder of the terminal, using relevant communication technique. In the basic case, voice communication is the communication technique, and a component element of the system 1 is a voice server 17. The server then asks the user of the communication server for granting authorization for the planned payment. Granting authorization by the user can be done in any way, depending on the

capacities of the voice server. In the simplest case, it can be pressing by the user a selected key on the terminal: e.g. <0> key to grant authorization and <1> key to refuse it, or <2> to refuse authorization and cause blocking the card thus making its further use impossible. In a more advanced case, the answer is given by the user with voice, and the voice server 17 recognizes the answer by speech analysis. After the user answer has been obtained and recognized, the system 1 transfers it to the basic authorization center 13 which takes an adequate action, i.e. grants or refuses authorization for the requested payment. An important feature of the control & calculation module 2 is also the way of its operation in the case when it is not possible to obtain an answer from the terminal user. Three potential reactions have been envisaged for such a situation, i.e. a systematic authorization refusal, systematic authorization granting and a choice between authorization refusal and granting. The choice between authorization refusal and granting depending on a certain criterion, such as for example the amount of the operation or the cumulative amount of payments in a specified period of time. The decision on which of the three possible answers will be sent to card authorization center 13 is made by the operator of the security system or directly by the terminal user in the description of preferences. Apart from voice communication with the terminal and card user, of course, also other communication techniques, for example multimedia messages, SMS or "instant messaging" can be used to obtain the user authorization answer.

To increase transaction security, there can be used a version of the control & calculation module 2, which formulates and sends to the communication terminal also the question that is to identify the user. The user has to provide the answer via the terminal and the answer is compared with the standard of that answer stored in the database 5. The positive authorization answer is taken into consideration only if the user has correctly answered the identification question. Exemplary identification questions include request for PIN related to the card or another number or text code.

Another version of the system 1 is additionally equipped with a calculating irregularity detecting module 3 (IDM – fig. 5), used to detect irregularities of authorization of payments requiring the use of a payment terminal. The system 1 in this version also contains an information database on the previous transactions made with cards 6 and two additional module interfaces 7 and 10. Interface 10

works as an intermediary in contacts with the payment terminals systems 12 managing the information on payment terminals, providing information on available payment terminals and their geographical positions. The location interface 7 enables connections with location modules 14 providing the service of locating localizable terminals. Irregularity detecting module 3 detects some illegal operations made with duplicated or forged cards, and its use can be conditional and depend on many factors, such as for example the amount of the payment to be made. Operation of the irregularity detecting module 3 consists in knowing the geographical position of payment terminals and in the assumption that two subsequent payments made with the same card must take place within a time span big enough for the card holder to be able to move between the geographical positions in which the payment terminals used to make the two subsequent payments are used. Based on the theoretical and/or empirical data, the standard (i.e. the smallest physically possible) time-spatial distance between the two payment terminals is calculated. Any request for additional authorization of the payment to be made with the payment terminal after confirming that the conditions of starting additional authorization are met (e.g. the amount of the operation exceeds the specified limit) is sent not directly to the control & calculation module 2 as was the case in the basic version of the system, but to irregularity detecting module 3. The question sent from authorization center 13 additionally contains a payment terminal identifier. Irregularity detecting module 3 retrieves from the database 6 information on the previous transaction made with the given card, that is the date and time of the payment and geographical position of the then used payment terminal. Then from the payment terminal system 12, via the interface 10 information on the geographical position of payment terminal that the additional authorized current payment is related to is retrieved. The information on the location of the payment terminal can be also included in the authorization question and then the payment terminal system 12 and the interface 10 are not used. After the necessary data have been retrieved, the time-spatial distance between the current payment operation and the previous operation related to the same card is calculated and compared with the standard distance. If the distance is smaller than the standard one, it can mean that it is likely that there exist two copies of the same card and that there is an attempt of a fraud. Further operations that the system can take in the circumstances are defined by the operator of the system

and/or in the description of the user preferences. The first of the possible reactions of the system can be triggering the basic procedure of additional authorization described above (BA – fig. 4), i.e. obtaining consent to or refusal of authorization from the user himself of the communication terminal related to the given card. The user is informed about the detected irregularity. The second possible reaction is direct forwarding to the basic authorization center 13 the information on the detected irregularity and on the necessity to refuse authorization for the current payment. The third reaction of the system is direct forwarding to authorization center 13 the information on the necessity to block the card in order to prevent its further use.

If the irregularity detecting module 3 finds that the time-spatial distance is correct, the request for additional authorization can undergo the previously described basic procedure performed by control & calculate module 2. The decision on performing the procedure or not can depend, for example, on the configuration of the system set by the operator, on the description of user preferences, on the amount of the payment and on the cumulative payment amount for the selected period.

If the card user has a localizable terminal, it is possible to start an additional checking procedure before the transaction authorization with the payment terminal described above. As in the previous cases, the procedure is triggered if the planned transaction meets the specified conditions, for example, if the amount of the operation exceeds the specified limit. The procedure consists in comparing the geographical position of the localizable terminal with the location of the payment terminal involved in the protected transaction. If the distance between the localizable terminal and the payment terminal is too big, it can be assumed that the payment card is probably used by another person. The comparison of the locations mentioned above can be done in two ways. In the first case, the location system 14 provides to the system 1 the information on the current location of the selected localizable terminal, and the irregularity detecting module 3 compares the given location of the terminal with the location of payment terminal in which the transaction is being made. In the second case, irregularity detecting module 3 provides to the location system 14 the information on the location of the payment terminal, localizable terminal identifier and the qualitative parameters describing the rules of comparing locations. The comparison itself is made by the location

system 14, which provides to the system 1 only the result of the comparison. If, as a result of the operations mentioned above, it turns out that the localizable terminal is not close to payment terminal, then the irregularity detecting module 3 considers the payment being authorized to be incorrect. The next part of the procedure is similar to the procedure of checking the time-spatial distance described above.

The system according to the invention can be also complemented by an information module 4 (IM – fig. 6). Role of the module is to supply, one-way, information to the card user. The one-way of sending information means that the system sends information to the user but does not expect any answer from the user. Information module 4 enables providing the user with the information related to payments with the card, the information that the user did not obtain as a result of the communication with the other modules of the system described above. In particular, that additional information can be information on the payment transaction made, information on payment refusal and information on detected irregularity. Providing that information can depend on various criteria, for example, on the payment amount. The information can be provided to, for example, the communication terminal or to a specified electronic mail address. If the information is sent to the communication terminal, it can be available, for example in the form of voice, multimedia message, SMS, e-mail or Website.

The system of additional payment securing can be a separate system or it can operate as a part of the basic card authorization system. It can operate on the machines shared with other systems or it can have one or more machines for its exclusive use.

In the exemplary implementation of the system according to the invention, it can be implemented on two Sun E240 type of machines working in high availability mode. Both machines communicate with each other via a multiplied local network Ethernet, via which the communication with the basic card authorization center 13 is also made. The communication with the voice sever 17 of the telecommunications system 16 is done via the wide network of X25 type with multiplied connections. The communication with the location modules 14 is based on a specialized protocol LIF (XML/HTTP). The card information management systems 15 are information systems about the customers of the banks that offer payment cards. The systems provide information on the customers using the

service of additional payment securing, on the scope of the service and the customer preferences, and the information can be obtained in the batch mode by transfer of files using FTP protocol. Due to the confidentiality requirement, the files are encrypted, just as the most significant information in the databases 5 and 6 is. The authorization interface 11 can be based both on local communication taking place within one machine and using the mechanisms of queues, shared memory or triggering procedures, and on any network communication protocol, for example TCP/IP or X25. And the communication interface 9 is based on the protocols offered by the operators of telecommunications systems 16 and depends on the type of the telecommunications service used. In particular, they can be ISDN, X25 or TCP/IP protocols. In the case of a voice server 17, the communication with the interface 9 can be performed in the way similar to the communication between interface 11 and authorization center 13. The location interface 7 is to identify the location of the localizable terminal when the system obtains from the authorization center 13 an authorization question and is based on the protocols offered by location systems. In particular, they can be HTTP or TCP/IP protocols. The modification interface 10 can be based on any type of local or network communication, just as in the case of the authorization interface 11 described above. The information that are provided by the systems 12 could also be provided to system 1 together with the tasks of additional securing coming from authorization center 13. Then, from the point of view of the invention, the system of 12 type becomes identical with card authorization center 13, and the modification interface 10 becomes identical with the identification module 11. The system according to the invention functionally has two databases 5 and 6, but in a concrete implementation those databases can belong to the same database, or each of them can be broken down into a number of various databases. The software of the system can be in C/C++ and ProC languages, using Oracle database.

Claims

1. The method of additional securing of payment card payments made via the basic card authorization center characterised in that before the transaction is made, the information about the card the transaction is based on is taken from the card information database (5), then an authorization question is asked and sent to the communication terminal assigned to the card and when the answer comes from the communication terminal, it is forwarded to card authorization center, and if there is no answer from the terminal, an automatic authorization answer is formulated for card authorization center.
2. The method according to claim 1 characterised in that an identification question is sent to the communication terminal apart from the authorization question and then the identification answer received from the terminal is compared with the standard and the authorization answer from the terminal is forwarded to card authorization center only if the identification answer is compliant with the standard.
3. The method according to claim 1 or 2, characterised in that before the decision on sending an authorization question to the communication terminal is made it is checked whether the transaction is to be made with the use of the payment terminal, and then, based on the data from information database on the transactions (6) and on the information on the geographical location of payment terminal, the time-spatial distance from the previous transaction made via the payment terminal with the same card is calculated and then compared with the standard and, depending on the result of the comparison, and possible additional rules, the transaction authorization is refused, or the authorization is granted automatically without any further questions, or the authorization question sent to the communication terminal is respectively modified.

4. The method according to claim 3 characterised in that the location of the localizable terminal assigned to the card of the transaction is additionally identified, and then the spatial distance between the payment terminal in which the transaction is made and the localizable terminal is calculated, and after the distance has been calculated, it is checked whether it is small enough and, depending on the result of the check and possible additional rules, the transaction authorization is refused, or the authorization is granted automatically without any further questions, or the authorization question sent to the communication terminal is respectively modified.
5. The method according to claim 1 or 2 or 3 or 4 characterised in that the information on the events related to the card assigned to that terminal is sent to the communication terminal.
6. The system of additional securing of payment card payments working with the basic card authorization center, characterised in that to each payment card serviced by the system is assigned at least one communication terminal and that it contains contain card information database (5) modifiable with a modification interface (8) by the card information management system, authorization interface (11) for the communication with the card authorization center, telecommunications interface (9) providing for the connection with the communication terminal and a control & calculation module (2).
7. The system according to claim 6, characterised in that the communication between the communication terminal (9) and the communication interface is implemented via a voice server.
8. The system according to claim. 6 or 7, characterised in that the card information database (5) contains standard identification answers of the users of the cards taken from communication terminals.

9. The system according to claim 6 or 7 or 8, characterised in that it contains card information database on the transactions made with cards (6), an interface (10) working as an intermediary in providing information on available payment terminals and their geographical location and a calculation module (3) calculating the time-spatial distance of the current transaction from the previous transaction made with the same card via the payment terminal.

10. The system according to claim 9, characterised in that it contains a location module (14) providing to the system the information on the location of the localizable terminal assigned to the card taking part in the authorized transaction and the calculation module (3) calculates the spatial distance between the payment terminal in which the transaction is made and the localizable terminal and compares it with the standard.

11. The system according to claim 10, characterised in that the communication terminal and localizable terminal are a one device.

12. The system according to claim 6 or 7 or 8 or 9 or 10 or 11, characterised in that it contains an information module (4) providing to the communication terminal, via a communication interface (9), information on the events related to the card to which the terminal is assigned.

1/6

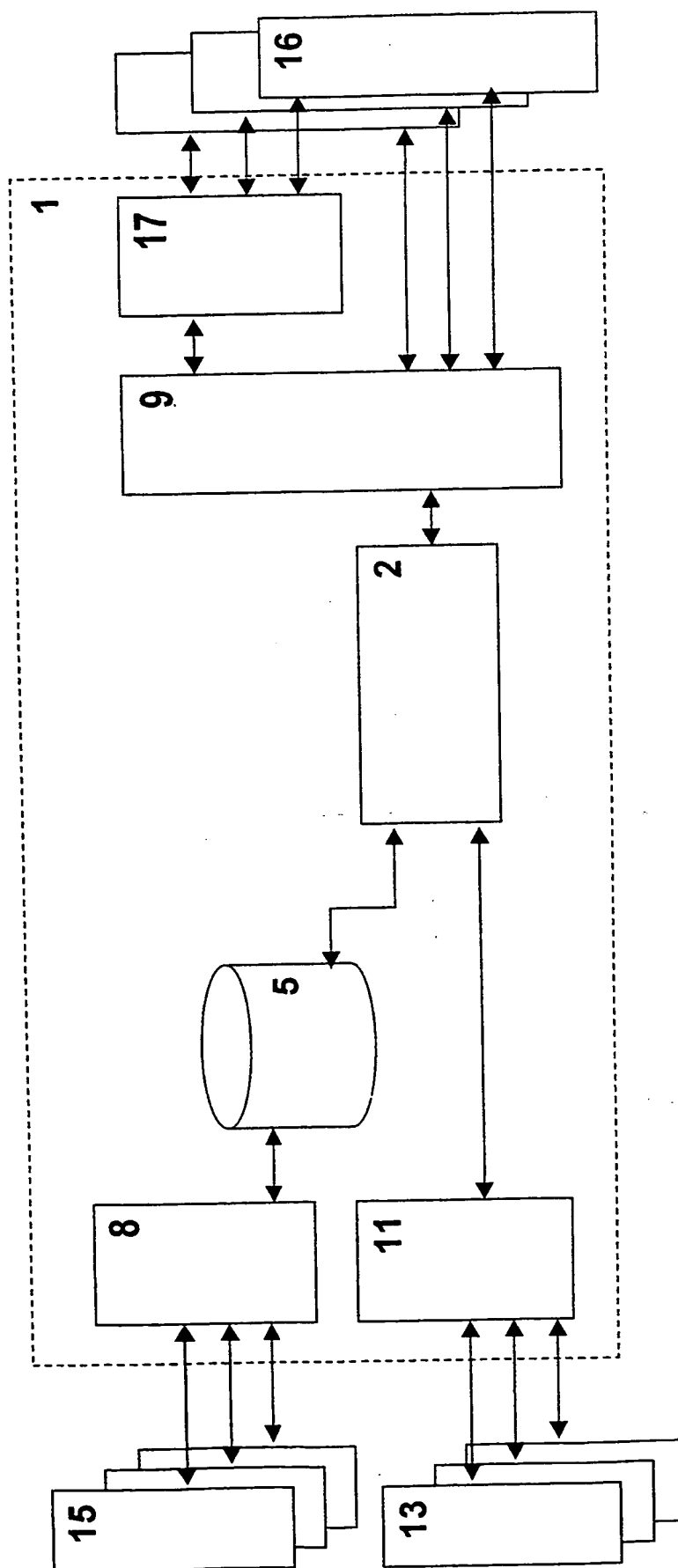


Fig. 1

2/6

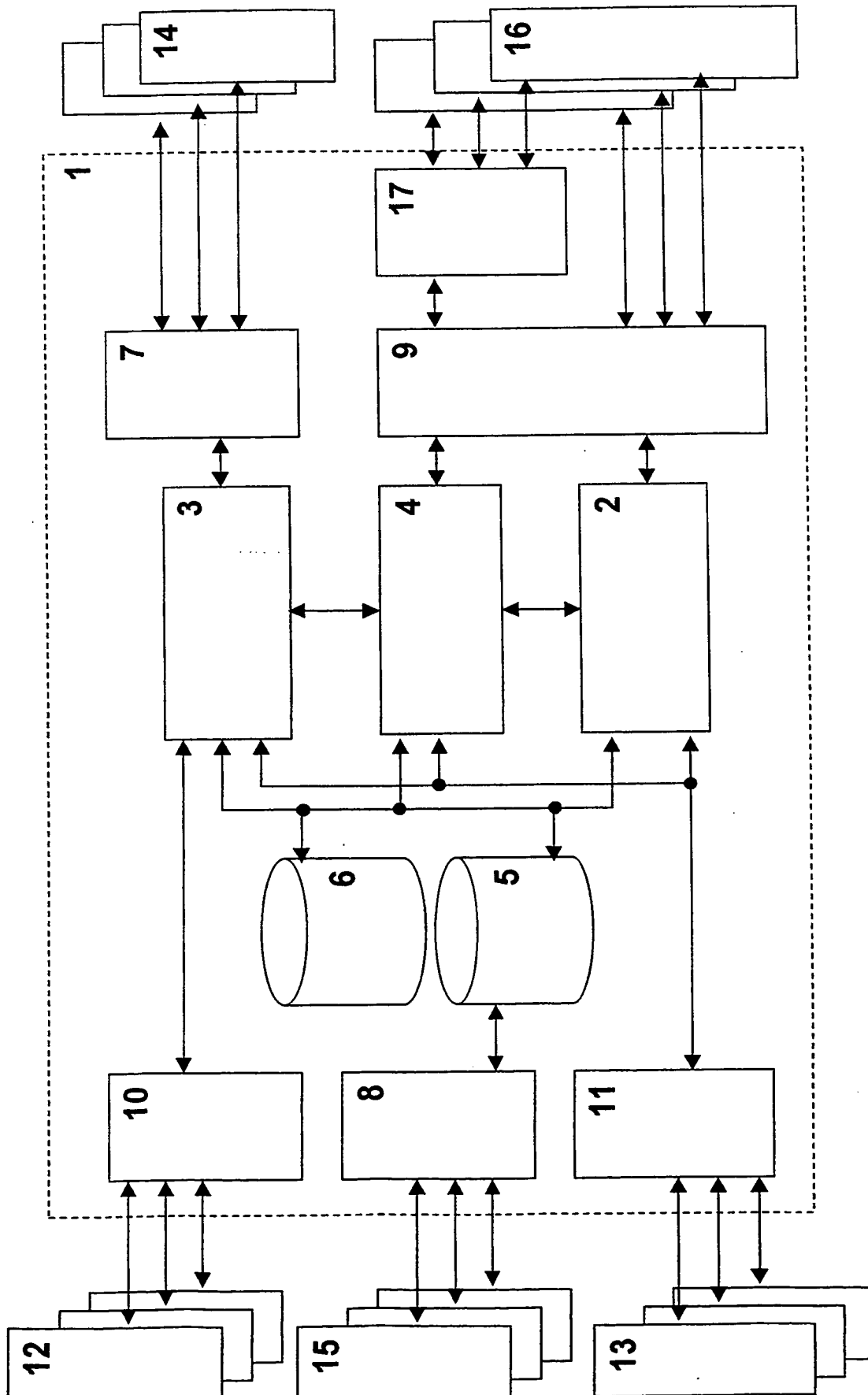


Fig. 2

3/6

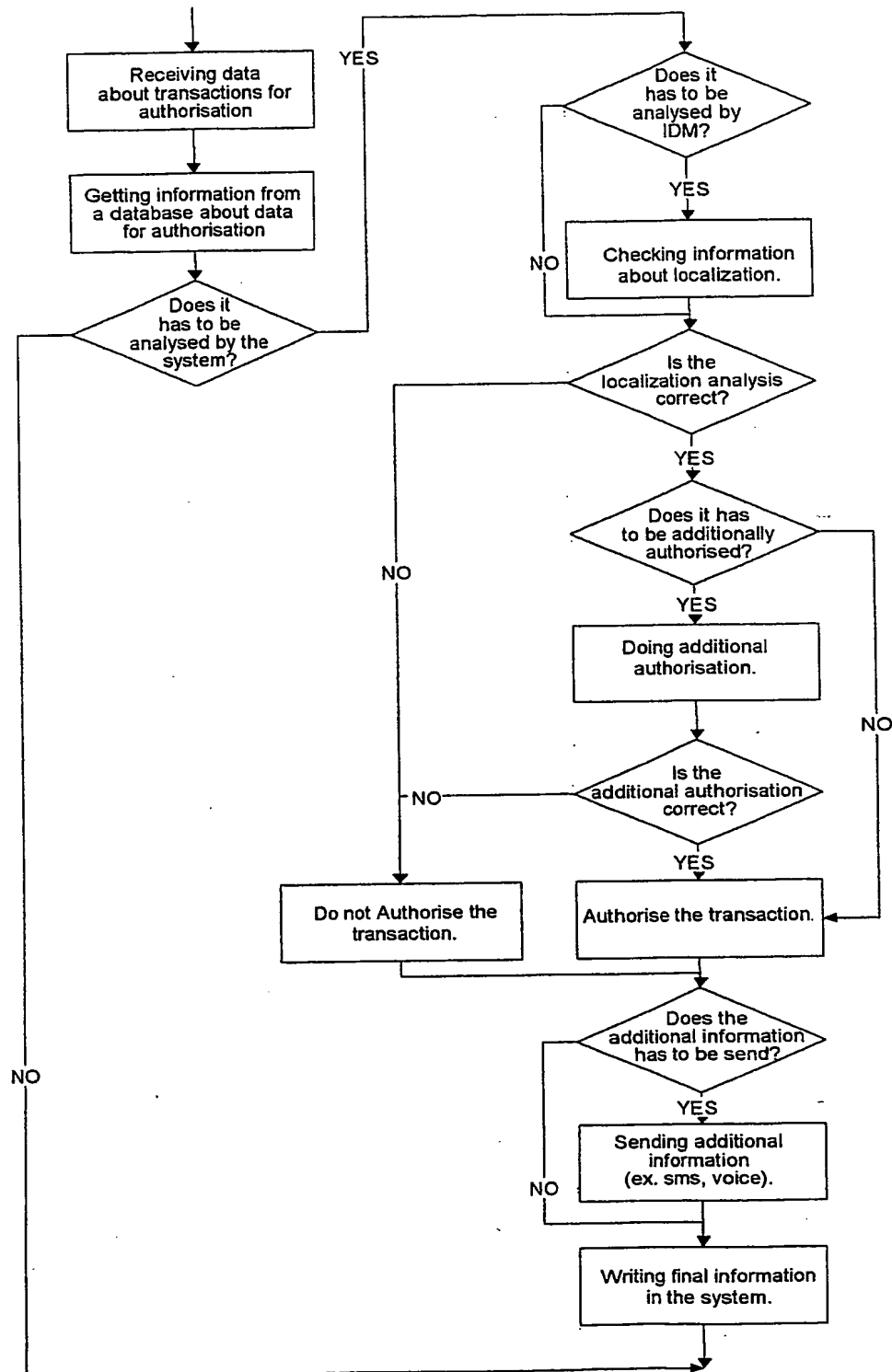


Fig. 3

4/6

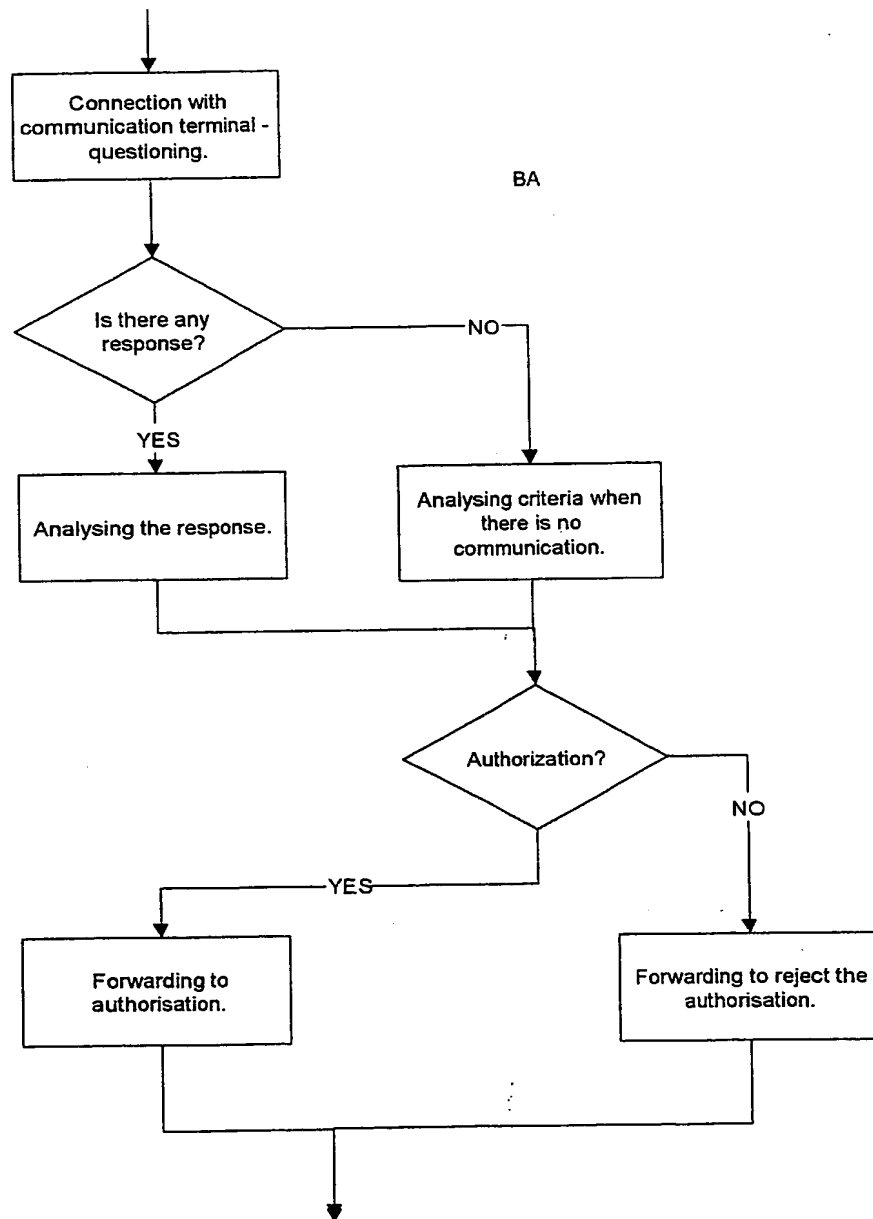


Fig. 4

5/6

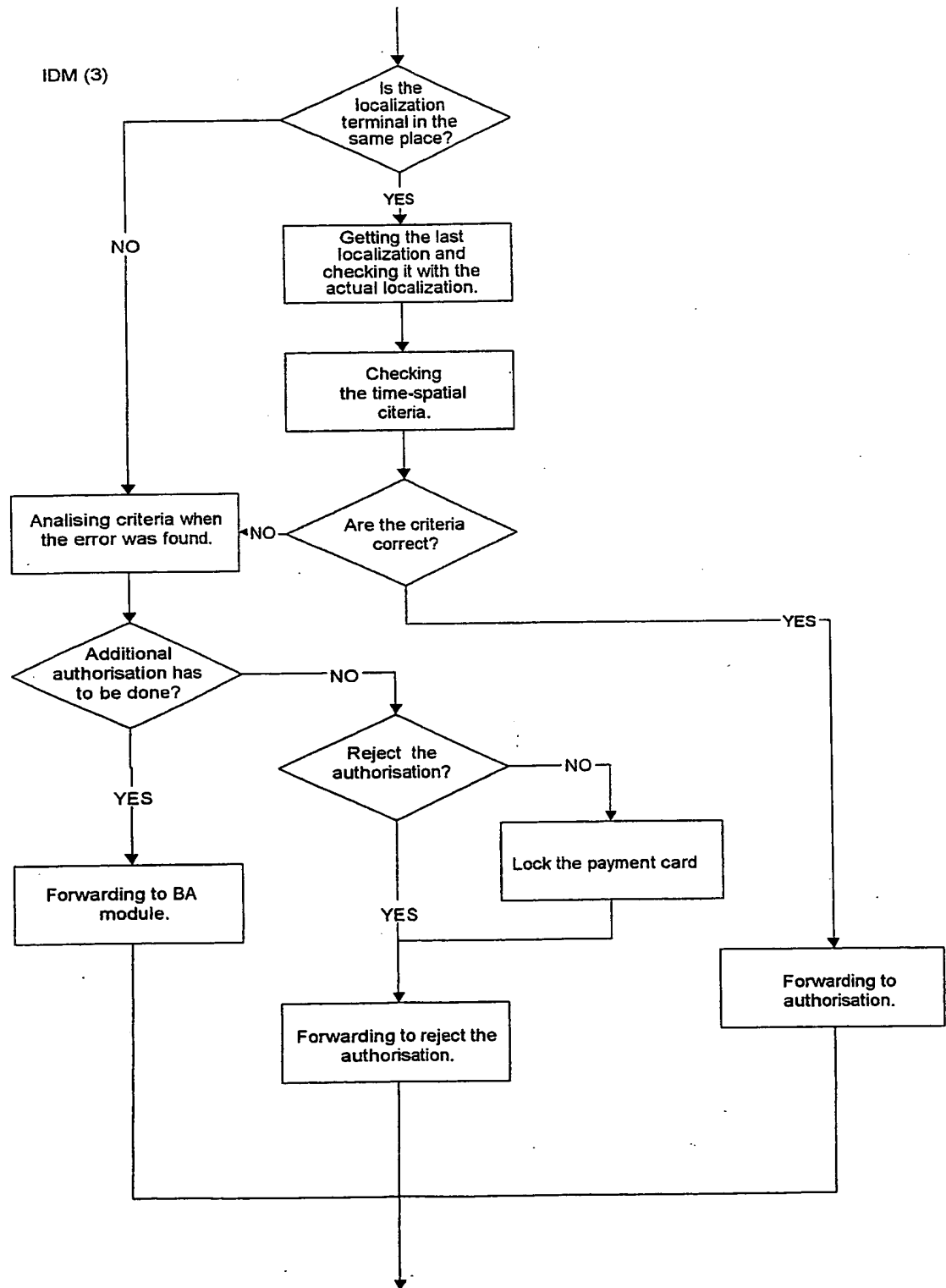


Fig. 5

6/6

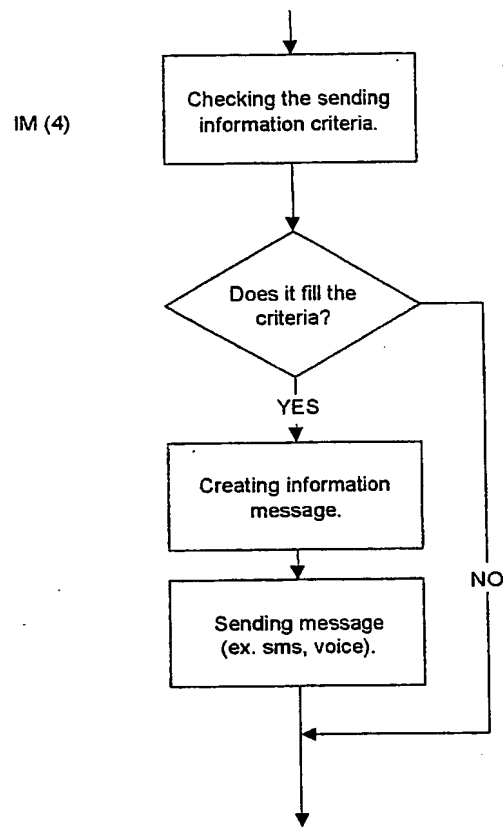


Fig.6

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number
WO 03/036576 A3(51) International Patent Classification⁷: **G07F 7/10,**
H04Q 7/22

(21) International Application Number: PCT/PL02/00075

(22) International Filing Date: 21 October 2002 (21.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P.350218 20 October 2001 (20.10.2001) PL

(71) Applicant and

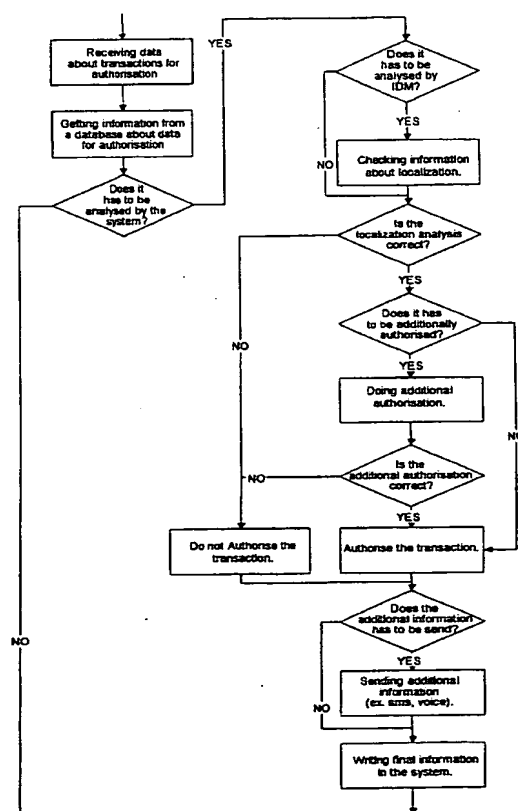
(72) Inventor: **WOJCIECHOWSKI, Wojciech** [PL/PL]; u.
Brylantowa 1/3, P-80 180 Godansk (PL).(74) Agent: **ADAMCZYK, Piotr**; Kancelaria Patentowa, P.O.
Box 39, PL-00-956 Warszawa 10 (PL).(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZM, ZW.(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
27 November 2003For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM OF ADDITIONAL SECURING OF PAYMENT CARD PAYMENTS



(57) Abstract: In the system a payment card can be assigned a communication terminal which provides for connection with the user and which can be remotely located. Before the payment is made, at least one additional authorization question can be formulated and sent to the communication terminal and the decision on transaction processing is made based on the answer provided by the user of the terminal. It can be checked whether the current geographical location of the communication terminal is close enough to the geographical position of payment terminal, or whether it is feasible that the card holder can move from the previous payment terminal to the current one. In its basic version, the system contains an information database about the cards (5) modifiable via a modification interface (8) by the system of card information management, authorization interface (11) for communication with the card authorization center, telecommunications interface (9) providing connections with terminals and a control and calculation module (2). The system can also contain information database about the transactions made with cards (6), interface (10) working as an intermediary in providing information on available payment terminals and their geographical position, location module (14) providing the system with the information on terminal locations and calculation module (3) calculating the time-spatial distance of the current transaction from the previous transaction made with the same card via payment terminal or the spatial distance between the payment terminal in which the

INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/PL 02/00075

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G07F7/10 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 H04M H04Q G07F G07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 41488 A (DICE COMPANY) 19 December 1996 (1996-12-19) abstract; claims 1-3; figure 1 page 2, line 3 - line 24 page 3, line 3 - line 18 page 3, line 24 -page 4, line 14 page 4, line 30 - line 37 page 5, line 2 -page 6, line 34 ---	1-12
X	US 5 335 265 A (SONBERG KENNETH W ET AL) 2 August 1994 (1994-08-02) abstract; claims 1-26; figures 1-5 column 1, line 48 -column 2, line 36 ---	1-12
X	US 6 097 938 A (PAXSON DANA W) 1 August 2000 (2000-08-01) abstract; claims 1-7; figure 3 ---	1-12
	--- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

14 August 2003

Date of mailing of the international search report

26/08/2003

 Name and mailing address of the ISA
 European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax (+31-70) 340-3016

Authorized officer

Mennerun, S

INTERNATIONAL SEARCH REPORT

In International Application No

PCT/PL 02/00075

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 601 659 A (NEDERLAND PTT) 15 June 1994 (1994-06-15) abstract; claims 1-5 column 1, line 17 -column 2, line 40 -----	1-12

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/PL 02/00075

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9641488	A	19-12-1996	WO 9641488 A1	19-12-1996
US 5335265	A	02-08-1994	DE 69227122 D1	29-10-1998
			DE 69227122 T2	25-03-1999
			EP 0611513 A1	24-08-1994
			JP 7500955 T	26-01-1995
			WO 9309640 A1	13-05-1993
US 6097938	A	01-08-2000	AU 8642098 A	08-02-1999
			EP 0995324 A1	26-04-2000
			WO 9903287 A1	21-01-1999
EP 0601659	A	15-06-1994	NL 9202113 A	01-07-1994
			AT 134056 T	15-02-1996
			DE 69301530 D1	21-03-1996
			DE 69301530 T2	18-07-1996
			DK 601659 T3	24-06-1996
			EP 0601659 A1	15-06-1994
			ES 2084442 T3	01-05-1996

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number
WO 2003/036576 A3

(51) International Patent Classification⁷: **G07F 7/10,**
H04Q 7/22

(21) International Application Number:
PCT/PL2002/000075

(22) International Filing Date: 21 October 2002 (21.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P.350218 20 October 2001 (20.10.2001) PL

(71) Applicant and

(72) Inventor: **WOJCIECHOWSKI, Wojciech** [PL/PL]; u.
Brylantowa 1/3, P-80 180 Gdansk (PL).

(74) Agent: **ADAMCZYK, Piotr**; Kancelaria Patentowa, P.O.
Box 39, PL-00-956 Warszawa 10 (PL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

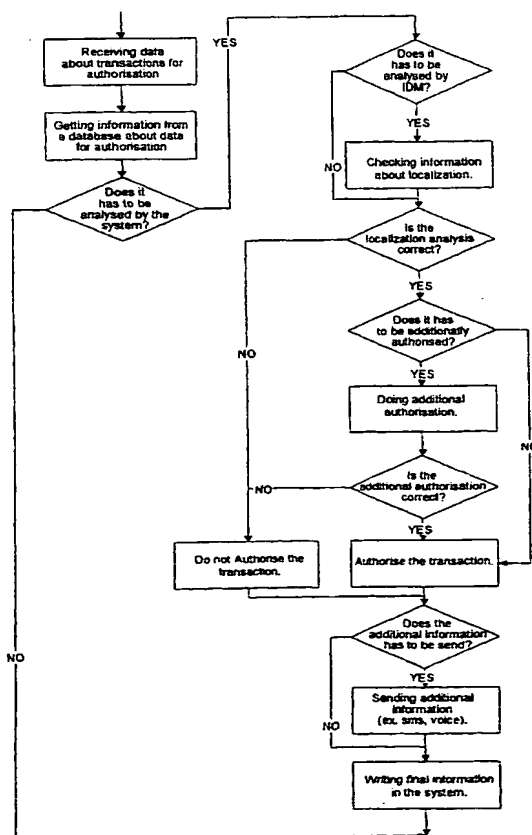
Published:

- with international search report
- with amended claims

(88) Date of publication of the international search report:
27 November 2003

[Continued on next page]

(54) Title: METHOD AND SYSTEM OF ADDITIONAL SECURING OF PAYMENT CARD PAYMENTS



(57) Abstract: In the system a payment card can be assigned a communication terminal which provides for connection with the user and which can be remotely located. Before the payment is made, at least one additional authorization question can be formulated and sent to the communication terminal and the decision on transaction processing is made based on the answer provided by the user of the terminal. It can be checked whether the current geographical location of the communication terminal is close enough to the geographical position of payment terminal, or whether it is feasible that the card holder can move from the previous payment terminal to the current one. In its basic version, the system contains an information database about the cards (5) modifiable via a modification interface (8) by the system of card information management, authorization interface (11) for communication with the card authorization center, telecommunications interface (9) providing connections with terminals and a control and calculation module (2). The system can also contain information database about the transactions made with cards (6), interface (10) working as an intermediary in providing information on available payment terminals and their geographical position, location module (14) providing the system with the information on terminal locations and calculation module (3) calculating the time-spatial distance of the current transaction from the previous transaction made with the same card via payment terminal or the spatial distance between the payment terminal in which the



Date of publication of the amended claims: 25 March 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Claims amended under Article 19 PCT

1. The method of additional securing of payment card payments made via the basic card authorization center characterised in that before the transaction is made, the information about the card the transaction is based on is taken from the card information database (5), then an authorization question is asked and sent to the communication terminal assigned to the card and when the answer comes from the communication terminal, it is forwarded to card authorization center, and if there is no answer from the terminal, an automatic authorization answer is formulated for card authorization center.
2. The method according to claim 1 characterised in that an identification question is sent to the communication terminal apart from the authorization question and then the identification answer received from the terminal is compared with the standard and the authorization answer from the terminal is forwarded to card authorization center only if the identification answer is compliant with the standard.
3. The method according to claim 1 or 2 characterised in that the location of the localizable terminal assigned to the card of the transaction is additionally identified, and then the spatial distance between the payment terminal in which the transaction is made and the localizable terminal is calculated, and after the distance has been calculated, it is checked whether it is small enough and, depending on the result of the check and possible additional rules, the transaction authorization is refused, or the authorization is granted automatically without any further questions, or the authorization question sent to the communication terminal is respectively modified.
4. The method according to claim 1 or 2 or 3 characterised in that the information on the events related to the card assigned to that terminal is sent to the communication terminal.

5. The system of additional securing of payment card payments working with the basic card authorization center, characterised in that to each payment card serviced by the system is assigned at least one communication terminal and that it contains card information database (5) modifiable with a modification interface (8) by the card information management system, authorization interface (11) for the communication with the card authorization center, telecommunications interface (9) providing for the connection with the communication terminal and a control & calculation module (2).

6. The system according to claim 5, characterised in that the communication between the communication terminal (9) and the communication interface is implemented via a voice server.

7. The system according to claim 5 or 6, characterised in that the card information database (5) contains standard identification answers of the users of the cards taken from communication terminals.

8. The system according to claim 5 or 6 or 7, characterised in that it contains a location module (14) providing to the system the information on the location of the localizable terminal assigned to the card taking part in the authorized transaction and the calculation module (3) calculates the spatial distance between the payment terminal in which the transaction is made and the localizable terminal and compares it with the standard.

9. The system according to claim 8, characterised in that the communication terminal and localizable terminal are a one device.

10. The system according to claim 5 or 6 or 7 or 8 or 9, characterised in that it contains an information module (4) providing to the communication terminal, via a communication interface (9), information on the events related to the card to which the terminal is assigned.